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09/777,661	02/07/2001	Makoto Tsuruta	Q62661	9239

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EXAMINER
FISCHER, JUSTIN R

ART UNIT	PAPER NUMBER
1733	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application N .	Applicant(s)	
	09/777,661	TSURUTA, MAKOTO	
	Examiner	Art Unit	
	Justin R Fischer	1733	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *31 October 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-9* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5* is/are rejected.

7)☒ Claim(s) *4 and 6-9* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *5* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

Claim Rejections - 35 USC § 102 / 103

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 1 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Iwata (US 4,702,293, of record). As best depicted in Figure 1, Iwata discloses a pneumatic tire construction having a carcass extending between a pair of bead portions and a belt structure arranged on an outside of said carcass in the radial direction, such that said belt structure is formed of a radially inner belt reinforcement (1) and a radially outer belt (2), as defined by the claimed invention. In this instance, the belt reinforcement is composed of one belt reinforcing layer having circumferential reinforcing elements and the "belt" is composed of a pair of crossed belt layers containing reinforcing elements that are inclined with respect to the equatorial plane of the tire (Column 3, Lines 52-66). Furthermore, Iwata incorporates a restraining rubber (cushion rubber C) having a width greater than four millimeters and arranged outward from a "widthwise outer end of a widest-width belt layer at least in the

widthwise direction" (Column 4, Lines 17-22 and Figure 1). Iwata also suggests that the cushion rubber have rubber properties similar to those of a coating rubber for the carcass and the belt (Column 6, Lines 60-64), it being noted that the claim is directed to embodiments in which the respective hardness values are the same. Thus, the reference is at least directed to an embodiment in which the hardness of the restraining rubber is equal to ("similar" to) the hardness of the belt topping rubber. While the reference fails to explain the exact meaning of "similar" properties, the language "similar properties" (i.e. modulus, hardness) would have lead one of ordinary skill in the art at the time of the invention to incorporate restraining rubbers having smaller, equal, and larger hardness values, as compared to the belt topping rubber, such that embodiments in which the restraining rubber hardness is equal to or greater than the belt topping rubber hardness meet the limitations of the claimed invention. Lastly, with respect to the width of the cushion rubber, it is clearly evident from Figure 1 that the cushion rubber has a width that is considerably larger than 4 millimeters. In particular, Example 1 suggests a width "w1" of 280 mm and a width "w3" of 195 mm (Column 4, Lines 17-20), in which case the distance between the reference lines "w1" and "w3" (defines portion of cushion rubber width) in each shoulder region is approximately 42 millimeters.

Claim Rejections - 35 USC § 103

4. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Iwata as applied to claim 1 above, and further in view of Mechanics of Pneumatic Tires (newly cited). As previously stated, Iwata teaches a pneumatic tire construction in which the restraining rubber and the belt topping rubber have "similar" properties. The reference, however, fails to expressly provide a quantitative value for the hardness of the

restraining rubber. In any event, topping rubbers of steel belt plies conventionally have a Shore A Hardness of 80, as evidenced by Mechanics of Pneumatic Tires (Table 10.3), which is approximately equal to 75 JIS. Thus, since the restraining rubber and belt (steel) topping rubber of Iwata have "similar" properties, one of ordinary skill in the art at the time of the invention would have readily appreciated and expected the hardness of the restraining rubber to be approximately 75 JIS, which falls directly in the middle of the range required by the claimed invention (65-85 JIS).

5. Claims 1-3 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cluzel (US 5,996,662, of record) in view of Mechanics of Pneumatic Tires and either one of Boileau (US 3,406,733, newly cited) or Dudek (US 4,044,811, newly cited). As best depicted in Figure 2, Cluzel discloses a pneumatic tire construction comprising a carcass extending between a pair of bead portions and a belt structure arranged on an outside of said carcass in the radial direction, such that said belt structure is formed of a radially inner belt reinforcement (20) and a radially outer belt (21, 22), as defined by the claimed invention. In this instance, the belt reinforcement is composed of one belt reinforcing layer having circumferential reinforcing elements and the "belt" is composed of a pair of crossed belt layers containing reinforcing elements that are inclined with respect to the equatorial plane of the tire (Column 2, Lines 5-15). Furthermore, Cluzel incorporates a restraining rubber (cushion rubber 5) having a width greater than 4 millimeters (depicted as such in Figure 2 and described in Column 3, Lines 60-65) and describes it as having a "high" modulus of extension or a secant modulus at 10% relative elongation of between 10 and 20 MPa (Column 2, Lines 25-32 and Lines 40-45). Although Cluzel fails to compare the restraining rubber to the belt topping rubber, it

is well known in the tire industry, in view of Mechanics of Pneumatic Tires (Table 10.3), that steel belt topping rubbers conventionally have a modulus of approximately 5.1 MPa, which is significantly smaller than the modulus of the restraining rubber in Cluzel. Thus, Cluzel in view of Mechanics of Pneumatic Tires suggests a pneumatic tire construction in which the restraining rubber has a significantly greater modulus, as compared to that of the belt topping rubber. Although this relationship compares the modulus and not the hardness of the respective rubbers, as required by the claimed invention, it is generally recognized in the rubber industry and the tire industry that the modulus and hardness have a positive relationship, such that a rubber composition having a greater modulus has a greater modulus, as evidenced by either one of Boileau (Column 2, Lines 3-6) or Dudek (Column 5, Lines 60-68). Therefore, one of ordinary skill in the art at the time of the invention would have found it obvious to form the restraining rubber of Cluzel from a harder rubber, as compared to the belt topping rubber, since (a) belt topping rubbers conventionally have a modulus that is between 0.25 and 0.5 times that of the modulus of the restraining rubber of Cluzel and (b) it is generally recognized that modulus will increase with hardness.

With respect to claim 2, applicant requires a cushion rubber hardness between 65 and 85 JIS. As previously stated, belt topping rubbers conventionally have a JIS hardness of 75, which falls directly in the middle of the range defined by the claimed invention. In view of the "high modulus" description by Cluzel, one of ordinary skill in the art at the time of the invention would have expected the hardness of the restraining rubber in Cluzel to be greater than 75 JIS, as it is generally recognized that modulus will increase with hardness. Furthermore, Cluzel gives a broad range of values for the

modulus (10-20 MPa), such that one of ordinary skill in the art at the time of the invention would have readily appreciated a plurality of embodiments in which the hardness of the restraining rubber in Cluzel is between 75 and 85 JIS, depending on the desired belt construction.

Regarding claim 3, Figure 2 of Cluzel depicts the gauge of the cushion rubber as being greater than the thickness of the belt reinforcement at the widthwise outer end of the belt reinforcement.

With respect to claim 5, the cushion rubber of Cluzel extends inward in the widthwise direction so as to cover the widthwise outer end part of the belt reinforcement.

Allowable Subject Matter

6. Claims 4 and 6-9 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. There was no reference in the prior art search that suggested the manufacture of pneumatic tires having, in addition to the general tire structure (bead, carcass, tread), a radially inner belt reinforcement containing at least one ply formed of circumferential reinforcing elements, a radially outer belt formed of at least two crossed plies, such that the widest with belt reinforcement ply is arranged outward from a widthwise outer end of a widest width belt layer, and a cushion rubber having a width of greater than 4 millimeters and a hardness greater than the hardness of the belt reinforcement coating layer, wherein the cushion rubber is formed as an extension of the belt reinforcement ply (i.e. integrally united with coating rubber). Also, there was no reference in the prior art search that suggested the

structure detailed above in which the cushion rubber is not "integrally united" and either (a) passes over the outer end of the belt reinforcement in the radial direction up to a zone between the belt reinforcement and a widthwise outer end of the widest width belt layer, (b) envelops the widthwise outer end of the belt reinforcement from its outside and inside in the radial direction, (c) is formed of two or more radially laminated rubber layers having a hardness in accordance to the limitations of the claimed invention, or (d) has a JIS hardness that exceeds 85 degrees and results in the use of an additional rubber layer between the carcass and said cushion rubber.

Response to Arguments

7. Applicant's arguments filed October 31, 2002 have been fully considered but they are not persuasive.

Regarding the rejection of claims 1 and 2 with Iwata, applicant contends that the reference fails to (a) disclose a width for the restraining rubber of greater than 4 millimeters and (b) describe a restraining rubber that is arranged "outward from the widthwise outer end of the widest-width belt reinforcing layer at least in the widthwise direction". First, as previously stated (Paper Number 4, Paragraph 2), it is clearly evident from Figure 1 and the description by Iwata that the cushion rubber C has a width that is greater than 4 millimeters. In particular, the distance between the reference lines "w1" and "w3" in each shoulder portion is approximately 42.5 millimeters, wherein this distance represents a portion of the width of the cushion rubber C. Second, while applicant argues that the cushion rubber of Iwata is beside the widthwise outer end and not outward of the widthwise outer end in the widthwise direction, it is the examiner's position that the cushion rubber or restraining rubber of Iwata is disposed

outward of the widthwise outer end in the widthwise direction. It is clear from Figure 1 that the cushion rubber of Iwata extends axially beyond the widthwise outer end of the relevant belt layer, wherein the axial direction is the widthwise direction. The language of the claim, as currently drafted, does not exclude the restraining rubber from being "beside" the relevant belt layer, as described by applicant. As such, one of ordinary skill in the art at the time of the invention would have found it obvious to form the tire of the claimed invention in view of Iwata and the additionally cited references, as set forth in the rejection above.

Regarding the rejection of claims 1-3 and 5 with Cluzel, applicant argues that (a) Cluzel is silent regarding the hardness and the width of the restraining rubber and (b) Cluzel provides additional rubber layers that are not needed in the construction of the claimed invention. First, Cluzel describes the restraining rubber as being a "high modulus" rubber, in which the modulus is between 10 and 20 MPa. While there is no direct comparison with the hardness of the belt topping rubber, one of ordinary skill in the art at the time of the invention would have readily appreciated the language of "high modulus" as defining an embodiment in which the restraining rubber is formed of a harder rubber composition as compared to the adjacent belt topping rubber, it being well recognized that belt topping rubbers are not usually formed of such high modulus rubber compositions (10-20 MPa), as evidenced by Mechanics of Pneumatic Tires. Second, while Cluzel incorporates additional rubber layers in the belt reinforcement assembly, the claim fails to exclude the inclusion of such rubber layers and as such, one of ordinary skill in the art at the time of the invention would have found it obvious to

form the tire of the claimed invention, including a cushion rubber layer having a higher hardness as compared to the rubber of the adjacent belt topping rubber.

Lastly, applicant contends that a rubber with a high modulus does not necessarily have a high hardness (i.e. the modulus and the hardness do not have a positive relationship). As stated in the previous office action, it is the examiner's position that it is generally recognized in the rubber industry and the tire industry that the modulus and hardness are positively related, such that modulus will generally increase with hardness. Boileau (Column 2, Lines 3-6) and Dudek (Column 5, Lines 60-68) have been applied to expressly evidence the generally recognized relationship between the modulus and the hardness. As such, one of ordinary skill in the art at the time of the invention would have expected the restraining rubber of Cluzel (modulus = 10-20 MPa) to have a greater hardness than the belt topping rubber of Cluzel (conventional modulus, in view of Mechanics, = 5.1 MPa), especially since the restraining rubber has a significantly larger modulus than the conventional belt topping rubber (between approximately 2 and 4 times greater).

Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Justin R Fischer** whose telephone number is **(703) 605-4397**. The examiner can normally be reached on M-F (7:30-4:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Ball can be reached on (703) 308-2058. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Justin Fischer

Justin Fischer

January 7, 2003

JEFF H. AFTERGUT
PRIMARY EXAMINER
GROUP 1300